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A

BEDSIDE MANUAL

OF

PHYSICAL DIAGNOSIS,

APPLIED TO

DISEASES OF THE LUNGS; PLEURÆ; HEART;
VESSELS; ABDOMINAL VISCERA;
AND UTERUS.

BY CHARLES COWAN, M.D. . & E. &c.;

TRANSLATOR OF LOUIS ON PHTHISIS.

LONDON:
SHERWOOD, GILBERT, AND PIPER.
1836.

837.

BODLEIANA · BIBLIOTHECA ·

TO

P. A. PIORRY,

THE DISCOVERER OF MEDIATE PERCUSSION,

From his deeply indebted pupil,

THE AUTHOR.

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PREFACE.

THE intention of the little volume now presented to the reader, is not to rival or replace any of the more extended and didactic treatises upon Auscultation or Percussion, but to furnish him with a summary of the best established signs for the diagnosis of disease, supposing a previous acquaintance with their individual value and interpretation, as well as with the nature and application of the means best adapted for their detection.

In the study of every department of knowledge, not yet perfectionised, and based upon progressive observation, much must be written which has rather a prospective than an immediate result; and it is often difficult to select materials for present use, from the mass of half-approximated facts, half received and half rejected hypotheses, towards which our attention is solicited. While it is true, that by their study and perusal we add to our general knowledge of the subject, whatever it may be, and place ourselves in a position to judge of its merits and progress, yet we often fail to acquire that definite perception of what is really known, so as confidently to proceed to its practical application. There is indeed little difficulty in comprehending the leading principles, or what we may call the literature of Auscultation and Percussion, or even in mentally adapting them to the discovery of certain imaginary pathological conditions; but long experience and great practical habit are necessary to enable us to derive at the *bedside* all the advantages they are capable of affording; and we must have possessed many opportunities of necroscopic confirmation of the fallacy or correctness of our diagnosis, before we are rewarded with that settled reliance upon the evidence of well substantiated physical signs, which it would be too often presumption to attach to the most accurate analysis of the general symptoms.

We feel convinced, that the number of students who extensively benefit by the use of the means to which we are referring, is very limited when compared with those who possess but a theoretical familiarity with their details; while there is an intermediate class, who evince a practical acquaintance with the subject to a certain extent, but who relinquish their confidence in physical investigation when opposed to the complications which the protean progress of disease so frequently engenders. It is to the last two classes that this little Manual is principally addressed, with the hope of marshalling to their aid, in the moment of practical need, those physical indications which are immediately suited to their wants; and, by fixing the attention upon the more prominent and frequent characteristics of particular diseases, to assist in relieving the mind from the anxious embarrassment which seldom fails to accompany a less definite and visionary knowledge.

Every intelligent and conscientious observer must admit that he encounters occasional complications which baffle his ingenuity, and prove the imperfection of his skill; but, on the other hand, it is far more frequently the case, that we ascribe our hesitation and mistakes to the defects of the science itself, when in reality they are depending on the very inadequate time and attention we have devoted to the successful application of the knowledge it was in our power to attain. On the other hand, the obstacles opposed to an accurate physical examination of our various organs are in general much underrated; and we either, from a merely lettered acquaintance with the subject, feel an exaggerated and deceptive reliance upon this one of the many modes of enquiry, or underrate its utility by the little success which attends the exercise of our half-educated individual skill. In the one case, our zeal is soon tempered by repeated disappointment, in the other it is injuriously repressed by our limited expectations; in both, utility is sacrificed, and the progress of improvement arrested.

We deprecate the intention, as well as folly of the effort, so to provide the student with materials of diagnosis, that he is absolved from the exercise of his reflection, and from dependence on his own resources, believing that in physics as well as morals, if we would arrive at any really valuable result, the practice must be conjoined with the precept, and in the application of our principles to particular instances, much is necessarily left for the observer's sagacity to fill up.

To become a successful auscultator, does not simply include the possession of the finest ear, the most improved stethescope, and a memory charged with a long catalogue of possible combinations, but to have acquired by experience and personal research a practical acquaintance with the physical structure and natural boundaries of our organs, with their various pathological conditions, with the laws of the production and transmission of sound, and to have exercised our senses as the aids of the intelligence, rather than as the prompters of our memory. If only superficially studied, auscultation and percussion will but increase our confusion, leading us into errors which, had the attention been wholly directed to the general symptoms, we might perhaps have avoided; but if steadily pursued, they will prove a source of constantly recurring satisfaction, centralizing our indications, and establishing the prognosis, where uncertainty and indecision would otherwise have prevailed. They often enable us to be positive when our superiors, both in knowledge and experience, are necessarily in doubt; and if they sometimes check the hopes which the general symptoms have encouraged, they as frequently justify favourable anticipations where others despond. They cannot therefore be too assiduously, though they may be too *exclusively* cultivated, and however far from having attained the perfection our wishes would dictate, they must in their present state be regarded as invaluable additions to our knowledge. and as amply recompensing the time and trouble necessary for their practical acquisition.

In the following pages we have purposely abstained from all explanatory or controversial observations; our object not being to *teach*, but to revive in the mind of the student the more prominent physical characters of particular diseases; not burdening the memory by any vain attempt to embody in description the endless complications of which they are susceptible, fully satisfied that we could only have enumerated a very limited number, not one of which would in all probability have exactly applied to the instance immediately before him. We have insisted upon the differential diagnosis of the more important and more easily confounded affections, and appended here and there a few practical remarks and precautions for the guidance of the juvenile and uninitiated. It has been our wish to lay before the student a practical sketch of the present pretensions of physical diagnosis; to advocate the claims of percussion as well as those of auscultation; and to extend their application to every portion of the human frame, where they can in any way serve to elucidate either the seat or nature of disease.

Constant reference to authors would only have interrupted the attention, and needlessly occupied our space; but we may once for all express our obligations to the labours of Laennec, Piorri, Hope, Bouillaud, Forbes, Louis, Andral, Kennedy; to the valuable papers of Dr. Stokes; to the observations of Drs. Corrigan, Law, Graves, Main, &c., scattered through the Dublin Journal; to various other sources; and, in some slight degree, to our personal experience.

How far we have succeeded in accomplishing the object we have in view, we must leave to judges more impartial than ourselves to determine; but if we shall have in any measure promoted the study and utility of physical diagnosis, we shall neither regard our time as mispent, nor our hopes as frustrated.

Bath, October, 1836.

ON THE EXPIRATION.

We shall somewhat deviate from the plan we have laid down, of avoiding all elementary details, by very briefly directing the student's attention to the study of the natural respiration, since the views we entertain have not been previously insisted upon, and because their exposition is, to a certain extent, necessary for appreciating some of the diagnostic signs enumerated in the following pages.

The act of respiration has been physiologically divided into two periods, viz. the *inspiration* and *expiration;* but with reference to acoustic phenomena, these have been either confounded, or if regarded as distinct, no practical consequence has been deduced, and no separate description given of their respective modifications, either in health or disease. Their separate investigation is not however a matter of mere scholastic refinement, but is directly applicable to early and accurate diagnosis.

Under the term of " respiratory or vesicular murmur," the peculiarities of the *inspiration* alone have been fully and minutely described; we shall not therefore detain the reader by any useless repetition, but at once proceed to the consideration of the *expiration.*

If we listen to an adult and healthy chest, beginning at the trachea, and following its subdivisions downwards until we arrive over the vesicular structure of the lung, we find at first, that the sounds indicative of the ingress and egress of the air are nearly, if not exactly, similar to each other. In proportion as the bronchi become smaller, more numerous, and enveloped by the pulmonary parenchyma, the *inspiratory* murmur gradually predominates, and over the deep vesicular portions of the lung it is alone audible. To an attentive ear, however, the period of expiration is, in many instances, not completely silent, but accompanied by a distant, feeble sound, originating in the larger bronchi round the root of the lung, and evidently not occupying the same locality as that of the inspiration. In some individuals, with the exception of the region we have alluded to, the expiration is not at all heard, while in others it is more diffused and more distinct, though in the absence of disease it can never be mistaken for the inspiratory murmur.

Why the expiration should be so comparatively feeble and almost confined to the larger tubes, may be explained by recollecting that the expired air finds but a very slight obstacle to its passage from the vesicles into the smaller bronchi; since this is effected by the spontaneous obliteration of the spaces it previously occupied, the lung itself accompanying the retreating air, while the volume of the larger bronchi being increasingly disproportionate to the aggregate area of the pulmonary vesicles, which collapse round the primary and less elastic tubes, it is evident that both the volume and rapidity of the air in the latter must be gradually increased: a fact which at once explains both the nature and locality of the expiratory sound. In *inspiration*, on the contrary, the entrance of the air is *opposed* by the elasticity of the vesicles, and the forcible contact which results is one of the immediate causes of the accompanying murmur.

In all cases where the elasticity of the lung is impaired, the bronchi remaining free, the expiration is diminished; but if the smaller tubes are partially obstructed, either by thickened membrane or viscous secretion, it is then characterised by prolonged submucous or sibilating ronchi.

Should the density of the lung, from tubercular or other deposit, be *increased*, the expiration becomes proportionately *louder*, more *superficial*, and successively bronchial and cavernous, its correspondence with the movements of the thorax alone distinguishing it from the morbid inspiratory murmur, of which it seems a repetition.

It is also important to remark, that alterations in the expiratory murmur are in general appreciable before those of the inspiration ; and they may therefore be regarded as among the surest and earliest indications of either bronchial obstruction and diminished elasticity, or of some anormal deposit in the pulmonary parenchyma.

For additional details we must refer the reader to our "Contributions to the Diagnosis of Thoracic Disease," Nos. 4 and 5 in the Medical Gazette for May 28th and July 9th, 1836.

BEDSIDE MANUAL

OF

PHYSICAL DIAGNOSIS, &c.

SECTION I.

PHYSICAL SIGNS OF DISEASES OF THE LUNGS AND PLEURA.

DISEASES OF THE BRONCHIAL TUBES.

Auscultation discovers sibilating, sonorous, mucous or sub-mucous ronchi; separately or combined, partial or general, constant or occasional, and modified by the cough and expectoration.

The *inspiration* may be natural or slightly puerile; at other times it is feeble, or temporarily interrupted over a limited portion of the lung.

The *expiration* is in general more prolonged, louder, and wheezing.

Percussion is every where normal; there is no vocal or other resonance, nor any external modification of the chest.

Remarks.—Simple bronchitis almost invariably commences in the *lower and posterior* portions of the lungs; it usually attacks *both sides*, advancing from below upwards. M. Louis has found no exception to this law, which is the inverse of that of phthisis. If the affection is slight, or only occupies the larger tubes, or if the patient has just expectorated, no physical signs may be detected. The diagnosis is then founded upon the cough and expectoration.

The acute and chronic mucous and pituitous catarrhs, the dry and suffocative, are principally distinguished by the duration of the case and the general symptoms, and also by the amount and character of the expectoration.

DILATED BRONCHI.

Percussion. It is usually clear, but not unfrequently less sonorous than natural, through very seldom quite dull.

Auscultation detects coarse mucous or gurgling ronchi, increased by the cough, combined with or replaced by bronchial or cavernous inspiration and expiration, which are often effected as if by a sudden puff or whiff. The resonance of the voice is increased, but seldom amounts to perfect pectoriloquy.

Remarks.—The most common situations for dilated bronchi, are the scapular mammary or lateral regions. They are almost always confined to one side. To distinguish them from tubercular cavities, *vide Phthisis.*

OBLITERATION OR COMPRESSION OF THE AIR TUBES.

Auscultation. The *inspiratory* murmur is weaker or wholly suppressed over a limited portion of the chest; the *expiration* is generally more distinct and prolonged; all other conditions are natural.

REMARKS.—It is important to determine whether the vesicular murmur is restored by a deep inspiration. If the cause of the compression be the heart, or a pulsating tumor, the entrance of the air, as well as the vocal resonance, are jerking and interrupted. Local feebleness of respiration without any apparent cause, should lead us carefully to inspect the condition of the heart and large vessels.

PHTHISIS.

FIRST PERIOD. *Scattered miliary tubercles. Exterior of the thorax.* The only appreciable, though not constant change, is a want of freedom in the movements of the chest under one or both clavicles.

Percussion, if skilfully performed, will, in the majority of instances, discover a slight diminution of sound over some portion of the parietes, corresponding to the summit of the lung.

Auscultation. The *inspiration* in the same locality is either weaker, rougher, or confused.

The *expiration* is also comparatively more distinct. It is important to remember, that the modifications of the latter are often appreciable before those of the inspiration.

The voice and cough are rather more resonant, and wheezing or mucous ronchi are occasionally heard in the same region, and not extending beyond it.

SECOND PERIOD. *Tubercular deposit more abundant. Exterior.* The motion of the chest is more evidently diminished under the clavicles, on one or both sides.

Percussion. The loss of sound is now more distinct, and the resistance to the finger greater. It is not modified by a deep inspiration.

Auscultation. The *inspiration* is bronchial; the *expiration* is louder and more superficial; the resonance of the voice and cough is increased, and the cardiac sounds are more audible in the same point. The rest of the lung is healthy, or we discover puerile respiration.

PERIOD OF SOFTENING. In addition to the preceding signs, auscultation reveals a more or less abundant subcrepitous ronchus round the apex of the lung, and decreasing from above downwards. It is most distinct during or after the cough, and at the close of a deep inspiration. With the progress of the disease, the bubbles become successively larger, and ultimately gurgling. The inspiration and expiration, from being bronchial, are cavernous or tracheal. The voice and cough are progressively bronchophonic and pectoriloquous. The intercostal spaces are often locally depressed, and the percussion may become gradually clearer, and even tympanitic, as the excavation advances.

REMARKS.—It is most important to remember, that these different changes *commence*, with very few exceptions, in the summit of the lungs, and proceed from *above downwards*;—that *one* lung is in general first affected, and the disease is seldom at any period equally advanced in both; consequently, comparative examination of the same lung and of correspondent portions of the opposite side, should never be omitted. We should particularly examine the sub-clavicular regions, and supra spinous fossæ, where the signs are often more distinct than anteriorly. *Bronchial ronchi limited to the sub-clavicular regions, are almost pathognomonic of tubercles.* In some extreme cases, in addition to a tympanitic clearness of sound under the clavicles, we may have metallic tinkling and amphoric respiration. This condition is to be distinguished from pneumothorax, by determining the contact of the remainder of the lung with the parietes. The presence of emphysœma in the upper lobes obscures some of the physical signs, but an attentive examination, either before or behind, will generally detect the real nature of the case.

DIFFERENTIAL DIAGNOSIS.

Dilated bronchi and turbercular cavities. The former lesion is almost always limited to one lung; it generally occupies the scapular, mammary, or lateral regions; it is chronic, and comparatively stationary in its progress; it never indicates a *large* excavation; the sound or percussion is seldom materially impaired; and the rational symptoms of phthisis, as hœmoptysis, pains in the chest, striated expectoration, &c., are wanting. These indications, combined with the history of the case, and the actual condition of the patient, will perhaps always distinguish the two affections.

Chronic bronchitis and phthisis. In bronchitis, the ronchi and other symptoms decrease from *below upwards;* the percussion is natural, or nearly so, particularly under the clavicles; there is no bronchophony, pectoriloquy, or cavernous respiration; the inspiration, when audible, is vesicular; the expiration, protracted and wheezing. Examine also the character, duration, and succession of the general symptoms.

Pneumonia and phthisis. If pneumonia is limited to the lower lobes, or if we recognise it from the commencement, there can be no difficulty in the diagnosis; but if the hepatisation already occupies the upper portion of the lung, we have no distinctive physical sign. The history and progress of the case, the effect of treatment, the character of the expectoration, and the general symptoms, will in most cases enable us to decide.

TUBERCULATED BRONCHIAL GLANDS.

In addition to the existence of similar tumors in the neck, percussion would sometimes give a dull sound under the upper and central portion of the sternum; there would be intermittent dyspnœa, with no appreciable lesion of the lungs.

PNEUMONIA.

FIRST DEGREE. *Percussion* in general recognises some diminution of the sound over the affected part.

Auscultation. An equal, rather dry, crepitating ronchus may be detected. It is best heard at the close of a deep inspiration, or with the cough, and is not displaced by the latter. The respiratory murmur is intermingled with the crepitous ronchus, or absent; it is natural or puerile in the vicinity. The voice and cough are rather more resonant than usual.

SECOND DEGREE. *Hepatisation.* The motion of the affected side is impeded; and just above the sternum, and in the corresponding triangular space on either side, there is frequently an evident depression.

The *percussion* is quite dull in all positions of the patient, and very resisting to the finger.

Auscultation. The crepitation is replaced by bronchial inspiration and expiration. The respiratory murmur is louder in the other portions of the lung; the voice and cough are more resonant:—the heart's action is also more distinct.

THIRD DEGREE. *Suppuration.* The same physical signs may continue; but usually the voice and cough are less resonant, and a coarse mucous ronchus is heard. In this stage, cavities, gangrenous or suppurative, may be formed: they will present the ordinary physical signs. To distinguish the third from the second stage of pneumonia, we must be guided also by the duration and general symptoms of the case, and by the expectoration.

Signs of resolution from the first degree. The crepitating ronchus is at first mingled with, and afterwards replaced by, the healthy respiration.

Percussion, and the other conditions become natural.

Signs of resolution from the second degree. A slight and unequal crepitating ronchus is heard at the close of each inspiration, gradually becoming more abundant, coarser, and associated with diminished resonance of the voice and cough; the inspiration by degrees becomes more vesicular; and the expiration more distant and feeble. These changes are accompanied by increasing clearness on percussion. We may remark, that in some chronic cases, the bronchophony increases at the moment of resolution.—*v. Dub. Hosp. Rep. vol.* 5.

Resolution from the *third* degree very rarely if ever takes place. The physical signs would not materially vary from those we have just enumerated.

CENTRAL PNEUMONIA. The crepitating ronchus of the first stage, or the bronchial respiration and vocal resonance of the second, are heard deep in the chest, through the natural or puerile respiration on the surface. The sound on percussion may, or may not, be altered. The diagnosis requires great attention.

LOBULAR PNEUMONIA. It could only be suspected from the rapid alternations of the indications of a healthy and hepatized lung. Its recognition in general is very uncertain.

REMARKS.—Under the age of fifty, pneumonia most frequently attacks the *lower lobes;* above that age, the *upper.—(Louis.)* Simple pneumonia seldom occupies both lungs at once; it neither displaces the adjacent viscera, nor alters the dimensions or form of the thorax. It is frequently associated with bronchitis; and the wheezing incident to accidental existing catarrhs, is rendered more distinct by a hepatized lung.

DIFFERENTIAL DIAGNOSIS.

Pneumonia, and enlarged liver. The presence of the latter is to be distinguished from hepatisation of the lower portions of the right lung, by the complete absence of bronchial respiration and resonance of the voice and cough; the dullness of sound depending on the liver, immediately succeeds the signs of a healthy lung, and the line of dullness is distinctly *depressed* during a deep inspiration.—*v. Phthisis and Chronic Pleurisy.*

[NOTE. For some anomalies in the physical diagnosis of pneumonia, *v. Dr. Hudson's Paper in the Dublin Medical Journal, July,* 1835; Raciborski's Manual of Auscultation, Trans. p. 172; and Dr. Grave's Observations on the Bellows Sound and Vascular Throbbing, which are sometimes present in the acute forms of Pneumonic Hepatisation.—*Dub. Journ. No.* 16.

ACUTE PLEURISY.

(Including all Cases where the Chest is only partially filled.)

Exterior of the chest. There is seldom any visible alteration. When the effusion is extreme, signs similar to those in chronic pleurisy will be observed. The motion of the affected side is diminished, and there is a local absence of vocal vibrations to the hand.

Percussion. There is more or less loss of sound, with only moderate resistance, decreasing from below upwards, and following the direction of a horizontal line round the chest, in the inferior dorsal and lateral regions. *The dullness is diminished or disappears by change of position.*

Auscultation. The inspiration is feeble, distant, or inaudible, but is restored by the condition last specified. Œgophonic resonance of the voice is usually present when the effusion is in moderate quantity, and is best heard "over a portion of the parietes, represented by a band of three inches, running from below the inferior margins of the scapula, in the direction of the ribs to the sternum."

Resolution. The sound on percussion becomes gradually clearer from above downwards; the œgophony ceases; and the respiratory murmur is restored. A rubbing friction sound occasionally accompanies both the invasion and resolution of pleurisy.

REMARKS.—Simple pleurisy seldom attacks both sides at once; when this is the case, suspect tubercles.

CHRONIC PLEURISY.

Exterior of the chest. The affected side is comparatively smoother, more rounded, and motionless; the intercostal spaces are *dilated and filled up,* or even slightly protruding. The eye and mensuration will in general detect some enlargement of the side. The thorax however, in very chronic cases, is occasionally *smaller* than the opposite side; the intercostal spaces are diminished; and the ribs are closer or even in contact, and more oblique in their direction. The corresponding shoulder is lower; and the dorsal spine is inclined to the healthy lung.

The triangular space above the clavicle, and the depression immediately above the sternum, are often strongly and pemanently drawn downwards on the diseased side. There is no vibration experienced by the hand when the patient speaks. The parietes are sometimes œdematous, and fluctuation between the ribs may occasionally be felt. In certain cases of empyœma on the right side, Dr. Stokes *(v. Dub. Jour. No.* 10, *p.* 39,) has remarked, that *a sulcus or depression,* evident to the sight and touch, will be observed between the most convex portion of the liver and the false ribs, presenting much less resistance to percussion than either above or below, and evidently the result of the space left around the point of contact of two convex bodies,—the upper surface of the liver, and the lower surface of the inverted diaphragm. It is not a permanent sign, but may be obliterated either by the absorption of the fluid, or the liver becoming impressed with the form of the diaphragm.

Percussion. The sound is universally dull; or if clear, only so in the upper portions, from the clavicle downwards. There is less resistance to the finger than in cases of hepatisation. The loss of resonance extends *under the sternum*, and often *beyond it*, encroaching on the healthy lung.

Auscultation. There is coarse or bronchial respiration between the scapula and vertebral column, round the root of the lung, with circumscribed but not intense vocal resonance. There is an almost complete absence of all other sounds over the remaining portions of the diseased side, except occasionally *transmitted* sounds, which are to be carefully traced to the healthy lung. No bronchophony, vocal, or other resonance.

Partial adhesions of the lung may produce occasional irregularities in the stethescopic phenomena, but they can never neutralize the leading indications of pleuritic effusion.

Effects of the effused fluid on the adjacent organs. Right side. The heart is pushed farther to the left; and the liver descends below the edges of the false ribs: the sulcus we have previously described, is sometimes visible.

Left side. The displacement of the heart to the right, is still more palpable: the epigastrium is prominent, in consequence of an irregular and diffused swelling, below the cartilages of the left false ribs, formed by the depression of the stomach. The spleen is lower down, and often detected by the touch.

Resolution of chronic pleurisy. In addition to the external signs of decreased dimensions of the affected side already enumerated, the *percussion* becomes gradually clearer from above downwards, though the sound is seldom as sonorous as over the healthy lung; occasionally it is permanently dull, and in some very rare cases, tympanitic; the *respiratory murmur* is increasingly audible, superficial, and vesicular; and the friction sound of false membranes is often both heard and felt; the displaced viscera resume their natural situations: various ronchi usually accompany these changes.

Is there pus or serum in the chest? There are no certain distinctive physical signs. The duration of the case, the general symptoms, and particularly the rapidity and amount of yielding in the diaphragm and intercostal muscles, must form our principal guides. The introduction of a grooved needle into the pleural cavity, recommended by Dr. Davies in his lectures on diseases of the chest, will of course remove all doubt.

DIFFERENTIAL DIAGNOSIS.

Partial effusion and pneumonia. In the former case there is no crepitation; and the dull sound on percussion occupies the most dependent portion of the chest, and is displaced by change of position.

Chronic pleurisy and pneumonia. In pneumonia, the dimensions and external characters of the chest are unaltered; the intercostal spaces are not filled up; the dullness on percussion is more resisting, and does not extend beyond the *centre of the sternum;* the adjacent viscera are not displaced. We may also add, that bronchophony, bronchial respiration, and vocal vibrations are only present in pneumonia, and the side is not so absolutely motionless as in chronic pleurisy.

Chronic pleurisy and enlarged liver. In hepatic enlargement, the intercostal spaces remain *depressed,* and the side does not present the smooth rounded appearance resulting from fluid pressure. Percussion would also elicit a clear sound for some distance under the clavicles; and the line of dullness would be depressed both before and behind, by a deep inspiration. The lower boundary of the liver would also probably indicate its increased dimensions, the edges of the right false ribs would be everted, and there would be no sulcus in the right hypocondrium. The heart, if displaced, is pushed *upwards* and to the left, by the liver.

CIRCUMSCRIBED PLEURISY. *Percussion* would give dullness of sound, with moderate resistance, over an irregular space, not modified by change of position.

Auscultation. The respiratory murmur is absent, or distant and feeble, while it is natural or puerile in the vicinity. Ægophony would probably be discovered over or round some portion of the edge of the effused fluid.

REMARKS. In the division of pleurisy into acute and chronic, we have simply intended to insist upon the physical signs of partial or general effusion into the pleural cavity. We therefore include in the preceding description, the diagnosis, of *empyæma*, *hydrothorax*, and *hæmothorax* and all the intermediate degrees of pleuritic effusion, merely observing, that the muscular part of the parietes is liable to be affected, in proportion to the inflammatory nature of the disease.

PLEUROPNEUMONIA.

Percussion gives constantly a dull sound for a variable extent over the more dependant portions of the affected side. The loss of sound is distinctly, though only partially modified by change of position.

Auscultation. The respiratory murmur is very feeble or absent inferiorly; higher up we discover the crepitation, or bronchial respiration of pneumonia; while round the root of the lung, and in the vicinity of the inferior angle of the scapula, ægophony is generally present. The bronchophony, when heard through the layer of fluid, produces a modified ægophony, which somewhat resembles the tremulous voice of punchinello. There is seldom much enlargement of the affected side, or displacement of the adjacent organs, as is the case in simple chronic pleurisy. The ascending and descending friction sound is perhaps more frequent under these circumstances.

PNEUMOTHORAX.

Exterior of the chest. The affected side is motionless, or nearly so. The intercostal spaces are widened, and in general *on a level* with the ribs. The thorax is arched, distended, and with few exceptions, enlarged from one to two inches.

Percussion. The sound is tympanitic, and there is at the same time an elastic sensation conveyed to the finger. The unnatural clearness of sound extends *under the sternum*, and often for some distance on the opposite side, where it is succeeded by the resonance of the healthy lung,

Auscultation. The respiratory murmur is completely absent, except immediately round the root of the lung, where it may be more or less bronchial.

Metallic tinkling, or amphoric buzzing, will in general be heard, either during or after the cough, utterance, or inspiration. Both these sounds accompany perforation of the lung; but the latter alone can be considered as pathognomonic of this complication.

Displacement of the adjacent organs. The heart is pushed to the healthy side. The diaphragm and the subjacent organs are depressed, as we have described them to be in cases of chronic pleurisy.

REMARKS. Pneumothorax may be spontaneous and simple, but is in a vast proportion of cases complicated with pleurisy and pulmonary tubercles. The signs of effusion are unusually easy of detection, the abrupt dullness of sound in the dependent portions, and the effect of change of position, being so distinctly marked. Succussion also produces fluctuation. When the lung is tuberculated and adherent, there is dullness on percussion under the clavicle or elsewhere; and auscultation discovers the evidence of induration or ulceration. In other cases this condition may be indicated by the intenseness and extent of the bronchophony round the root of the lung.

DIFFERENTIAL DIAGNOSIS.

Pneumothorax and emphysœma. In emphysœma, the ribs are never quite motionless, nor are the intercostal spaces filled up. Percussion is less tympanitic; and, either during the inspiration or expiration, some sound indicating the presence of the lung may be detected. The expiration in particular, is wheezing and prolonged. It is difficult to confound the two.

EMPHYSŒMA.

External signs. The thorax, locally or generally, appears unnaturally convex and prominent. The intercostal spaces are widened, but *depressed.* The inspiratory efforts are evidently increased.

Percussion. The sound is morbidly clear, but not tympanitic, often extending to the lowest regions of the chest, over the precordial region and the postero-inferior portion of the right side. It is not rendered clearer by a deep inspiration. When the disease is limited to one lung, the morbid clearness of sound may be detected under the sternum, and even beyond it. If emphysœma is recent and very partial, the preceding indications may be absent.

Auscultation. The inspiratory murmur is extremely feeble or suppressed; it is sometimes combined with, or replaced by, a superficial dry crepitation, or various bronchial ronchi.

The *expiration,* which is more frequently audible, is prolonged, laborious, and wheezing.

Effects on the adjacent organs. The heart may be pushed *downwards,* descending as low as the tenth rib. The diaphragm and abdominal organs, are, in severe instances, depressed, as we have seen in cases of effusion into the pleura. Dr. Stokes, in a valuable paper on this disease, in the Dublin Journal for March, 1836, has pointed out the importance of distinguishing emphysœma of the upper and lower lobes: we subjoin his differential diagnosis.

Emphysœma, without displacement of the Diaphragm.	*Emphysœma with displacement of the Diaphragm.*
1. The shoulders greatly elevated, and the upper part of the chest convex.	1. The shoulders not affected; the upper part of the chest flat, and the convexity only evident inferiorly.
2. The sound on percussion of the upper portions morbidly clear; of the lower, little altered.	2. The reverse.
3. The stethescopic signs of the diseases manifest in the upper portions.	3. These signs predominating in the lower lobes, and audible below the usual level of the diaphragm.
4. The epigastrium collapsed, and the heart and liver in their natural situations.	4. The epigastrium full and resisting; the right hypochondrium dull on percussion, and the heart displaced downwards.
5. The distress in breathing is much less, except during an exacerbation of bronchitis.	5. The dyspnœa is much more permanent, and less affected by treatment calculated to relieve bronchitis.

These conditions are seldom absolutely distinct; it is on their relative preponderance, that we have most frequently to decide.

INTERLOBULAR EMPHYSŒMA. There are no certain physical signs to distinguish it from the vesicular. Our diagnosis must be principally founded upon the sudden nature of the attack.

ASTHMA.

There are no pathognomonic physical signs of this disease, but it is always most important to determine the co-existent condition of the heart and lungs.

In some instances, the respiration is universally puerile during the attack; and diminished pulmonary elasticity, with bronchial complication, is often indicated by the prolonged, laborious, and wheezing expiration.

In spasmodic asthma, the respiratory murmur is very feeble or absent during the fit. In all kinds of the disease percussion elicits a clear pulmonary sound.

THYMIC ASTHMA.

Exterior. We should particularly examine the upper portion of the sternum, whether or not it is projecting; also, whether there is a fullness immediately above that bone, and round the base of the neck.

Percussion would give a dull sound under the upper half, or even the entire sternum, extending probably to a certain extent on either side of that bone.

Auscultation. The ear, at a distance from the chest, detects an incomplete, acute, hissing inspiration, or rather, cry; while the expiration and voice are croupal, both at the accession and termination of the fit. The heart's action is distant and feeble.

REMARKS. The general characteristics of this interesting and important disease, are, its attacking children from the age of three weeks to eighteen months; and also the suddenness of the paroxysm, coming on generally at the moment of awaking, or in the act of swallowing, the child lying on its back: the duration of the fit varies from a few seconds to three minutes, and death may almost instantaneously follow. The above diagnosis is inferred from the pathology of the disease, not from actual experience.—*V. Dub. Jour. July,* 1836, *paper by Dr. Montgomery ; and the Memoirs of Drs. Khopp and Hirsch, translated by Dr. Graves, in the same No.*

PULMONARY APOPLEXY AND HŒMOPTYSIS.

Percussion may not always assist us, but in general we discover a circumscribed dulness.

Auscultation. The inspiratory murmur is locally feeble, or absent, and replaced by bronchial respiration and bronchophony. We detect a fine liquid crepitus round the affected part; and in the larger tubes, near the spine, a liquid bubbling ronchus is usually heard; it is more fluid and more rapid than what is produced by mucus.

In simple *bronchial hæmoptysis,* the ronchus last described is alone present.

The value of these signs is determined by the nature of the expectoration.

DIFFERENTIAL DIAGNOSIS.

Pulmonary apoplexy and pneumonia. The accompanying fever and expectoration distinguish the latter.

ÆDEMA OF THE LUNGS.

Percussion. There is diminished resonance over a greater or less extent of the *posterior and more dependent* portions of the chest.

Auscultation. The respiratory murmur is feeble, and accompanied with an equal moist crepitation, of which we are sensible, either during the ordinary breathing, at the end of a deep inspiration, or with the cough.

REMARKS. This condition of the lung is frequently attendant upon a long continued recumbent posture, general debility, chronic bronchitis, typhoid pneumonia, and diseases of the right side of the heart. It is to be distinguished from the crepitus of pneumonia, and that of pulmonary apoplexy, by the general symptoms and its stationary character. It usually occupies both lungs.

CANCEROUS, MELANOTIC, HYDATID, AND OTHER TUMORS OF THE LUNG.

We can enumerate no distinctive physical signs indicative of the presence of these morbid growths in the cavity of the thorax. Our diagnosis must be founded upon the impossibility of referring the local symptoms to other and better understood conditions, and also upon a careful examination of the constitutional symptoms. These are cases which test the observer's sagacity.

DIAPHRAGMATIC INTESTINAL HERNIA.

The nature of the lesion would be suspected from the local absence of the respiratory murmur, and the presence of intestinal borborygmata, or other sounds, which could only be referred to the digestive tube.

INTERCOSTAL HERNIA OF THE LUNGS.

Percussion would give a clear sound ; and the stethescope would discover the respiration over the point corresponding to the tumor.

SECTION II.

PHYSICAL SIGNS OF
DISEASES OF THE PERICARDIUM AND HEART.

Inflammatory.

PERICARDITIS.

FIRST PERIOD. *Stage of inflammation. Exterior.* The action of the heart is generally evident to the eye, and may be felt by the hand. There is soreness to the touch over the corresponding intercostal spaces, and over a small surface in the epigastric region, when the pressure is directed upwards, towards the pericardium.

Percussion is usually natural, but it may indicate a slight increase of dulness when the heart is strongly congested.

Auscultation. The cardiac movements are *frequent*, abrupt, jerking, tumultuous; often irregular and intermittent.

The pulse presents corresponding characters; in severe cases it may be very weak, while the action of the heart is feeble but tumultuous. A bellows sound is frequently present, but it is not characteristic of this stage when uncomplicated.

SECOND PERIOD. *Effusion of lymph. Percussion* is negative as before, or very slightly affected.

Auscultation. In addition to the preceding symptoms, we have one or more varieties of the rubbing or friction sounds, resembling the rustling of bank paper or parchment; or presenting a sawing, rasping, or bellows character. In some comparatively rare cases, we detect a sound like the creaking of a new saddle when riding. This last is, perhaps, pathognomonic of effused lymph.

DIFFERENTIAL DIAGNOSIS.

To distinguish these phenomena from the consequences of valvular disease, we must pay attention to the following particulars:—In pericarditis, the sounds are superficial, and sudden in their appearance; they accompany, with few exceptions, *both* sounds of the heart, but are usually louder during the systole. They are limited to the prœcordial region; while the natural sounds of the heart, especially the second, can be detected beyond the locality of the anormal noises, which are also not transmitted through the large arteries. Lastly, the effects of pericarditic inflammation are rapidly modified by treatment. The gradual extinction of the sounds indicates either absorption of the lymph, or what is more common, the formation of adhesions, or the effusion of fluid; the distinguishing *signs* of both these terminations, we shall shortly detail.

REMARKS. It is advisable to examine the effect produced upon the sounds by the patient's holding his breath, since they may occasionally depend on adjacent pleural inflammation. In the latter case, their temporary cessation and synchronism with the respiratory movements would enable us to discriminate.

THIRD STAGE. *Effusion of Fluid. Exterior.* The heart's action can neither be seen nor very distinctly felt. The intercostal spaces are more filled up, and the prœcordial region (principally in chronic and extreme cases) is convex and prominent. We must distinguish the elevation depending upon the ribs, from the local œdematous swelling sometimes observed.

Percussion. The loss of sound extends over a larger space than natural, and is proportionate to the quantity of fluid, increasing especially under the sternum, and in a vertical more than in a transverse direction. If we carefully limit the line of dulness when the patient is lying down, and then percuss the same region when he is sitting up and leaning forward, or strongly inclining to one side, it will be found to vary by *change of position.* When the effusion is moderate, its recognition is facilitated by percussing the patient when leaning forward. The loss of sound may in extreme cases occupy the inferior third, or even half, of the anterior part of the left side.

Auscultation. There is no impulse transmitted to the ear, or it is only occasional and undulatory. The sounds are distant, obscure, and tumultuous; and the rythm is usually irregular. The anormal sounds are very feeble, or absent, but, with the impulse, may sometimes be rendered louder and stronger, by a change of posture, calculated to bring the heart into contact with the parietes.

Pleurisy and effusion into the pericardium. The loss of sound in the latter case is limited to the antero-inferior region of the left side, and is succeeded farther back by the clear sound and respiratory murmur of the healthy lung. On the contrary, in pleurisy, the posterior and inferior regions are first affected.

CHRONIC ADHESIONS OF THE PERICARDIUM.

The diagnosis is rather inferential than direct, and if the adhesions are partial, they cannot always be even suspected. The followng signs will however in many instances lead to their recognition.

Exterior. The action of the heart is very apparent to the eye, and easily felt. It seems to be diffused over a larger space than natural. The prœcordial region is generally prominent, and the corresponding intercostal spaces are drawn inwards during the systole. A vibratory tremor is often felt by the hand, and the heart, which is generally hypertrophied, seems *higher* in the chest than usual. A heaving trembling motion is sometimes perceptible, with pulsation above the clavicles. Occasionally, adhesions of the pericardium give rise to a perpetual movement of very strong undulation, appearing lower down than the region corresponding to the heart, and evident in the epigastrium. In this case the adhesions are principally diaphragmatic.

Percussion. The dulness of sound and resistance to the finger are increased in proportion to the hypertrophy. It is not modified by a deep inspiration.

Auscultation. The cardiac movements are forcible, abrupt, jogging, unequal, or struggling. The sounds in general are those of hypertrophy with dilatation, and as well as the impulse, convey the impression of close proximity to the parietes. A bellows murmur often accompanies this condition of the heart and pericardium.

EFFUSION OF AIR INTO THE PERICARDIUM.

It is, perhaps, always conjoined with the presence of fluid.

Percussion would give a tympanitic resonance, varying with change of position over some portion of the prœcordial region; while auscultation would detect a sound of fluctuation, corresponding to the heart's action, and modified by a deep inspiration. Dr. Bricheteau has described a case of purulent and gaseous effusion, when a sound resembling the agitation of water in a mill was very distinctly heard. With attention to the foregoing particulars we could not confound the condition we are considering, with fluid and tympanitic distension of the stomach, or with the pressure of an emphysœmatous lung in the prœcordial region.

Granulations of a dense, fibrous, or osseous nature on the surface of the pericardium, without adhesions, produce a rough superficial friction sound.

ENDOCARDITIS.

Exterior. The heart's action is visibly increased, and very distinct to the touch; the hand is repelled strongly; and, at moments, is sensible of a trembling vibratory sensation.

Percussion gives a dull sound over a surface of four, nine, or even a still greater number of square inches. This, M. Bouillaud (from whose work on Diseases of the Heart the description is extracted) ascribes to the inflammatory turgescence of the heart, and to the engorged state of its cavities.

Auscultation. A bellows murmur, masking one or both sounds of the heart, and loud in proportion to the force of the impulse, is almost invariably present; and the ear is sensible of a metallic ringing with each systole, of the ventricle, depending on the forcible stroke of the heart upon the parietes. The pulsations are rapid as well as strong, and with few exceptions, irregular, unequal, and intermittent.

The pulse does not always indicate the force or number of the heart's contractions.

Remarks. The above description refers to very acute inflammation of the internal membrane: but in partial, sub-acute, or chronic endocarditis, the physical indications are less prominent and often obscure, while the complication with pericarditis is extremely frequent.

DIFFERENTIAL DIAGNOSIS.

Some of the distinctive signs of endocarditis from pericarditis would be the fact, in the former case, of the heart's action continuing *superficial;* the bellows sound being deep seated, not affected by change of position, and heard in the larger arteries. In endocarditis the left side is also most frequently affected, and the disturbance in the circulation is greater.

CARDITIS.

It is almost constantly combined with either endo or pericarditis, and admits of no separate diagnosis.

ABSCESSES, ULCERATIONS, TUBERCULAR, HYDATID, CANCEROUS, OSSEOUS, OR OTHER TUMORS OF THE HEART.

They do not give rise to any distinguishing physical signs.

Diseases of Nutrition.

SIMPLE HYPERTROPHY OF THE HEART.

Exterior. In cases of long standing, the prœcordial region is generally prominent. The heart's pulsations are visible over a greater extent than natural, and occasion an undulatory movement in the epigastrium. The hand is rudely repelled and suddenly raised from the chest, and we are sensible of a vibration from the shock, which may be sometimes felt posteriorly.

Percussion. The dull sound is more extensive than natural, and with increased resistance to the finger.

Auscultation. There is a permanent augmentation of the force and extent of the heart's action, which raises the head or cylinder, and clearly conveys the idea of greater power; there is no increase of *frequency*, and the rythm is *regular*.

The *first* sound is duller, smothered, and prolonged; and, in extreme cases, may be replaced by a confused murmur. It is not transmitted to a distance over the chest.

The *second* sound is at first louder, but as the thickness of the ventricles increases, it becomes weaker, and is inaudible over the prœcordial region, while it may be detected under the upper third of the sternum, in the carotid and subclavian arteries, and for a short distance down the back. The pulse is generally strong, full, and hard.

CONCENTRIC HYPERTROPHY OF THE HEART.

Percussion detects no enlargement of the organ, but a very resisting and circumscribed dulness.

Auscultation. The impulse is strong, but limited in extent; only slightly raising the head, and soon lost beyond the prœcordial region. The *first* sound is extremely dull, prolonged, and occasionally not unlike the respiratory murmur. The *dyastolic* sound is very feeble over the heart itself, but may be discovered under the sternum, and in the larger vessels.

SIMPLE DILATATION OF THE HEART.

Externally, the action of the heart is not visible, and no impulse is conveyed to the hand. The prœcordial region is natural.

Percussion. There is a loss of resonance over a larger surface than usual, but the dulness is much less intense and less resisting than what accompanies hypertrophy.

Auscultation. The action of the heart is only slightly felt, and at once gives the impression of its diminished power. The impulse is weaker, brisker, and lower than usual. The *first* sound is clearer and shorter; becoming, in advanced cases, flapping and valvular like the second, and even inaudible, when the parietes are much enfeebled. The *second* sound is more extensively heard in the prœcordial region than usual, but is not altered in its character, though it is weak and distant in extreme cases. Both sounds are widely transmitted over the thorax, and are not much fainter at a distance from their point of origin.

ATROPHY OR DIMINUTION OF THE HEART.

Externally. The organ can neither be seen or felt.

Percussion. The prœcordial region is quite clear, or nearly so, and the respiration is distinctly heard.

Auscultation. Both the movements and sounds are extremely feeble and distant. The *first* sound is very valvular and clear, and in extreme cases inaudible. The pulse is small, thready, and very soft, or rather hard, in proportion as the cavity is large or small.

HYPERTROPHY WITH DILATATION.

Externally. The pulsations can be seen and felt over a larger space, and the apex is more to the left and lower down than natural. The impulse is less steady, but at moments more violent than what accompanies simple hypertrophy, or more undulating and less forcible when dilatation predominates.

Percussion. There is more distinct evidence of enlargement, the sound being extensively dull.

Auscultation. The impulse is often violent but irregular ; the heart at times suddenly receding from the ribs and sinking down into the chest, while in other cases, its contact with the parietes seems successive and gradual. In extreme cases, it produces the sensation of a large mass of flesh rolling, or irregularly revolving beneath the cylinder. The *first* sound is louder and more diffused over the chest. It of course varies, as well as the other symptoms, with the relative excess of hypertrophy or dilatation. The *second* sound is often obscure over the heart, but is very evident at a distance, and in the larger vessels. The pulse is full, strong, and vibrating, and the beatings of the arteries are very distinct. The shock of the heart's action is often transmitted to the whole person of the patient, and to the bed on which he is lying.

DIFFERENTIAL DIAGNOSIS BETWEEN DISEASES OF THE *RIGHT* AND *LEFT* CAVITIES OF THE HEART.

When the *left* ventricle is affected, the pulsation, impulse, loss of sound, and prœcordial prominence are most intense over the cartilages of the fifth, sixth, seventh, or eighth ribs, to the left of the sternum. The sounds are more distinct under the left clavicle, and in the corresponding side than elsewhere; the pulse is also modified, as well as the arterial circulation generally.

If the *right* ventricle is diseased, the symptoms are most strongly marked under the sternum, and beneath the cartilages to the right of that bone, as well as in the epigastrium. The morbid sounds are most distinct throughout the right thorax; the veinous system is more or less obstructed, (evinced by congestion and pulsation of the jugular and other veins,) while we have the negative evidence in favour of the healthy state of the left ventricle.

REMARKS. It is almost unnecessary to observe that in the majority of cases *both sides* are to a certain extent involved, but by attention to the preceding particulars, and to the following precautions, we shall seldom deviate widely from the truth.

PRECAUTIONS. In estimating the amount of impulse or dulness on percussion, as well as the distance over which the sounds of the heart are audible, it is particularly necessary to make allowances for the age of the patient; for the size of the thorax, especially its antero-posterior diameter; for the state of the parietes; the existence of malformation; for the healthy or morbid condition of the lungs; and for the fullness or relaxation of the abdominal cavity. We must also remember that phthisis, and other diseases involving increased density of the pulmonary organs, as also aneurisms of the descending aorta, not unfrequently indirectly augment the effects of the heart's impulse and the extent of dulness on percussion over the prœcordial region, both from the superior conducting power consequent upon increased solidity, and from the organ itself being pushed into closer contact with the parietes. The advice of the immortal Laennec may be profitably remembered: "examine closely, carefully, and repeatedly, before you conclude as to the nature of the disease."

NERVOUS PALPITATIONS OF THE HEART.

We can generally determine by careful examination, that the heart is not larger than natural; that the orifices are not obstructed; and that the general symptoms of cardiac disease are absent. The sounds are loud, but not diffused as in dilatation. The impulse is often strong and jerking, but not *heaving;* and if a bellows murmur is heard, it is not constant. The character of the general symptoms, and the natural condition of the heart's action in the interval of the attacks, would also assist our diagnosis. It must not however be forgotten, that nervous palpitations frequently complicate organic diseases of the heart.

DISEASES OF THE AURICLES.

Knowing the state of the ventricles and their orifices, will enable us frequently correctly to infer the condition of the auricles; but we have, with very few exceptions, no direct means of estimating their morbid alterations.

There is no doubt that, in some extreme cases, the systole and the dyastole of the left auricle may be distinguished, and its augmented volume ascertained, by percussion. We have detailed a case of this description in the Medical Gazette of 16th May, 1835. Laennee admits the fact, and M. Bouillaud (Mal du Cœur, vol. i. page 149,) also furnishes an instance.

Great veinous congestion,—the existence of pulsation not synchronous with that of the ventricle, and loss of sound high up under the sternum, would form the doubtful signs of hypertrophy and dilatation of the right auricle.

Various other Diseases of the Heart.

DISPLACEMENT OF THE HEART.

The diagnosis is founded upon discovering the heart in a situation more or less removed from its usual limits. With the exception of cases of transposition, all deviations from the natural situation of this organ, are to be regarded as indications of some more serious organic lesion. Pleurisy, aneurism, enlarged liver, abdominal tumors, emphysœma, or increased dimensions of the organ itself, are what we should principally suspect.

FALSE CONSECUTIVE CARDIAC ANEURISM.

It cannot be recognised before death. M. Breschet, however, thinks we should find a dull sound in the lower and anterior part of the left side; that the pulsations would vary over the base and apex of the heart. Over the latter, they would be full and vibratory, with a bellows murmur, corresponding to the affected point. Happily the lesion is too rare to render the diagnosis important.

RUPTURE OF THE HEART.

It is evident that the physical signs would vary with the part lacerated. If the septum was ruptured, the symptoms might be simply those of cyanosis. If the outer walls yielded, we should have the ordinary signs of pericardial effusion; and if a valve was perforated or detached, some modification of the bellows murmur.

FIBRINOUS CONCRETIONS, OR POLYPI IN THE HEART.

They may be suspected, when, in the course of an acute or chronic affection of this organ, or at the close of chronic diseases in general, (particularly those of the lungs,) the heart's action becomes suddenly tumultuous, obscure, and accompanied with a soft bellows murmur; while the general symptoms indicate the effects of obstructed circulation. The right cavities are most frequently affected.

SIGNS OF DISEASES OF THE CARDIAC ORIFICES AND VALVES.

We may premise as a general remark, that the bellows, filing, sawing, and musical, or whistling murmurs, are all capable of being produced by various degrees of contraction, or roughness of the orifices and valves. When therefore we speak of a *bellows sound*, we include its varieties.

AORTIC VALVES.

A prolonged murmur accompanies the *first* sound and is confounded with it; it is most distinct about the middle of the sternum, or between the fifth and sixth ribs, to the left of that bone, in persons with a deep chest. It is moderately superficial, and not widely diffused over the heart or thorax, but may be distinctly traced in the *ascending aorta*, *carotids*, and *subclavians*. The sound is much less intense than what characterises either aortic dilatation or aneurism. If regurgitation is possible, a murmur, fainter and shorter, accompanies the *dyastolic* sound, which is much impaired or obliterated over the left side, but it may be heard on the right side of the chest, where it is produced by the pulmonic valves. The pulse is in general weak, if the disease is considerable.

Permanent patency of the aortic valves without contraction of the orifice. (Corrigan.) A bellows murmur in the same situation, and transmitted through the large vessels as we have just described; a vibratory sensation in the carotids and subclavians; visible pulsation of the head and neck; and a full bounding pulse. These signs must coexist and be permanent.

MITRAL VALVES.

The anormal murmur accompanies the *second* sound, which is *not* destroyed, but may be heard under the sternum and in the large arteries. The bellows murmur is deeper seated than the preceding, and its maximum of intensity is to the left of the sternum, between the third and fourth ribs; or still more to the left, in the neighbourhood of the mamma. It is *not* transmitted through the large arteries. If regurgitation takes place, there is a murmur also with the *first* sound, *not* heard in the ascending aorta. The pulse is generally feeble and unsteady, and the purring tremor is often perceptible.

PULMONARY VALVES.

The murmur occupies the same situation as that produced by the aortic valves, or nearly so, but it is more hissing and superficial; it seems close under the sternum, and is not repeated in the ascending aorta, or its subdivisions. The pulse is not affected, while there is more or less obstruction of the veinous system.

TRICUSPID VALVES.

The maximum intensity of the sound is at the middle part of the sternum, opposite the intercostal space, between the third and fourth ribs, and a little to the *right* of the mesial line. The murmur is deep, and if single, accompanies the *second* sound, but if regurgitation takes place, it equally characterises the *first* sound, which is either modified or destroyed on this side of the heart. Pulsations in the jugulars usually attend tricuspid regurgitation, and the veinous circulation generally is much obstructed.

NARROWING OF THE HEART'S ORIFICES.

The hand detects a purring vibratory tremor, with irregular, intermittent, or unequal action; the ventricles, at moments, seeming rapidly to contract twice or three times for one radial pulsation.

Percussion usually announces evident enlargement of the heart.

Auscultation detects a harsh bellows or saw sound, which is permanent in proportion to the extent of the narrowing. The pulse is small, hard, irregular, and intermittent; and if the obstruction is seated in the cavities, the veinous system is much affected.

INDURATION AND THICKENING OF THE INTERNAL MEMBRANE OF THE HEART AND VALVES, WITHOUT NARROWING OF THE ORIFICES OR DIMINUTION OF THE CAVITIES.

The sounds are remarkably intense, harsh, abrupt, and valvular; they somewhat resemble the sudden approach of two dry pieces of parchment. There is no irregularity nor embarrassment in the circulation. If the auriculo ventricular valves are adherent to the cardiac parietes, we should, in addition, detect a soft and diffused bellows sound.

REMARKS. It is evidently important to ascertain not only valvular disease, but the healthy or morbid dimensions of the orifices; the latter conditions powerfully influencing the prognosis. Our principal indications consist in the nature of the sounds, and the free or obstructed state of the arterial and veinous circulation.

To distinguish murmurs produced by valvular disease from those arising from chlorosis, hœmorrhage, hypertrophy with dilatation, and hysteric palpitations, we should remember, in addition to the indications of the presence or absence of these affections, that valvular murmurs are more constant, less diffused, less modified by treatment, and are in general harsher than the bellows sound accompanying the conditions we have enumerated.

SECTION III.

PHYSICAL SIGNS OF

DISEASES OF THE VASCULAR SYSTEM.

◆

SIMPLE DILATATION OF THE ARCH AND ASCENDING AORTA.

Exterior. Both the sight and touch discover increased pulsation over the sternal extremities of both clavicles; strongest on the right side, if the ascending portion is alone affected. A purring tremor may also be felt in the same region; which, if not constant, is easily excited by the slightest exertion.

Percussion. There is a slight diminution of the clear sound under the upper portion of the sternum, if the dilatation is considerable.

Auscultation. A loud, hoarse, abrupt, rasping or bellows murmur, is present above the clavicles, and can be traced in the carotids, subclavians, and for a short distance down the back; *under the sternum* it is changed into a superficial hissing or whizzing sound, but no *impulsive pulsation* can be felt. It is not heard over the heart.

Remarks. The above description applies to an advanced stage of the disease; we can only *suspect* slighter changes in the calibre of the ascending aorta.

DILATATION OF THE PULMONARY ARTERY.

Exterior. We discover moderate *pulsation* with a purring tremor to the *left* of the sternum, between the cartilages of the second and third ribs. These signs are *not* present above the clavicles.

Percussion. There is some loss of sound over the corresponding region.

Auscultation detects a loud, very superficial, and harsh sawing murmur, most intense over the point already described, but *not* transmitted through the carotids or subclavians, though sometimes present immediately above the sternum. It does not complicate the cardiac sounds. The locality of the anormal murmur, and its non-transmission through the larger arteries, are the distinguishing signs from the preceding affection.

REMARKS. *Ossification* of the larger arteries is inferred from the peculiar harshness and intensity of the sound. There are instances where the whole aorta is more or less lined by osseous deposits, and where a bellows murmur may be detected all down the back, having no point of particular loudness as in aneurism, and unaccompanied by any unusual pulsation.

SACCULATED ANEURISM OF THE ARCH AND ASCENDING AORTA.

Exterior. A pulsatory impulse may be either seen or felt, both above and *below* the clavicles; it is usually stronger below, and is in general most distinct under the sternum, or a little to the right or left side of that bone, as the aneurism occupies the ascending aorta or the arch. It is also sometimes felt high up in the back; and there is pain on pressure over the corresponding vertebra. A purring tremor may be felt above the clavicles, but it is weaker that what accompanies simple dilatation. Dr. Stokes has also directed attention to a peculiar appearance of *fullness* round the base of the neck.

Percussion. There is more or less diminution of sound over the points corresponding to the aneurism.

Auscultation detects *two* sounds. The first, a bellows murmur, synchronous with the cardiac systole, but most intense over the point corresponding to the anormal impulse, and very feeble or absent over the heart. It is also transmitted through the subclavians, carotids, and for some distance down the back, where it gradually ceases. The second is shorter and clearer than the first, and is evidently the communicated dyastolic sound of the heart. It does not however always increase in intensity as we approach the latter organ, because the aneurismal tumor may form a better conducting medium, but in many instances this is a distinguishing character.

Accompanying signs. The respiratory murmur is very feeble or absent in the upper lobes of *one side*, but it may be usually restored by a *deep* inspiration. The entrance of the air is interrupted by the pulsations of the tumor, and is sudden and puffing, forming a succession of small inspirations during a single inspiratory effort. The feebleness of respiration on one side, without any condition of the lung to explain it, ought always to make us suspect some mechanical obstruction.

Dr. Billing (*Lancet*, 1833-4, *p.* 443,) considers the *resiliency* of the pulse, produced by the contraction of the aneurismal sac immediately after the ventricle, a very early indication of aortic aneurism. The pulsations in the *radial arteries* are often *unequal;* and we generally remark more or less engorgement in the cervical veins of one or both sides. The upper extremities are sometimes œdematous and benumbed. *Dysphagia,* referred to a particular spot, is a frequent symptom, as are also dyspnœa, a croupal character of the voice, and wheezing inspiration. An irritable laryngœal cough is usually combined with the above.

DIFFERENTIAL DIAGNOSIS.

Aneurisms of the subclavian or carotid arteries are to be distinguished from those of the aorta, by the impulse, sound, and purring tremor, being more superficial and distinct, and limited to the affected side.

ANEURISM OF THE DESCENDING AORTA.

Except in extreme cases, no *external* pulsation or impulse can be seen or felt; nor does *percussion* offer any certain indications. Pain is generally complained of in the back; and the finger, when firmly pressed over the point corresponding to the aneurism, often detects a purring tremor.

Auscultation. By carefully auscultating over the dorsal vertebræ, a bellows murmur, with a deep and not always perceptible impulse, may be detected. It decreases both above and below, and is not heard over the heart, or is very feeble compared with what it is in the back. It is unaccompanied by any dyastolic sound, and is usually most distinct to the left of the spinous processes.

The *respiration is often feeble or absent* over the *lower* lobe of one side, and presents the same peculiarities as those we have detailed in the preceding section.

Dysphagia is less frequent than when the aneurism is situated higher up; but when present, is referred to some point below the middle of the sternum, often coinciding with the seat of the tumor.

REMARKS. There are also *negative* signs which may assist in distinguishing the affection from aneurism of the arch or ascending aorta; such as the pulsations at the wrists being equal; the absence of œdema, or numbness of the upper extremities; the natural state of the voice, and freedom from laryngœal respiration; and the absence of any local symptoms immediately above or below the clavicles.

ANEURISM OF THE ABDOMINAL AORTA.

Exterior. A constant and heaving pulsation, generally to the left of the vertebral column, may be felt by depressing the parietes with the hand.

The tumor is fixed, but compressible, and evidently occupies a greater transverse width than is compatible with the diameter of the healthy vessel.

Percussion. If the tumor is large or superficial, a proportionate loss of sound will be observed.

Auscultation. Over the point of maximum pulsation, there is a short and only moderately loud bellows sound, limited, transversely, to the size of the tumor, but conveyed downwards for some distance in the direction of the aorta: it rapidly decreases upwards, and is not present over the heart. At the back, it is less frequently heard than is the case with thoracic aneurism, and the vertebræ are not so liable to become secondarily affected.

REMARKS. Dr. Corrigan very properly advises the patient being examined in the *horizontal* position, which removes the hydrostatic pressure, and relieves permanent distension of the sac. A bellows murmur, which is inaudible in the erect posture, may be distinctly restored by attention to the above precaution.

We must never be hasty in deciding on abdominal aneurism; but recollect that tumors of different kinds, indurated fœces, enlargement of the pancreas, scirrhus pylorus, an accumulation of serum, and other conditions, may increase the force and extent of the aortic pulsations, and occasion a bellows murmur. Care and repeated examination will however almost always enable us to decide.

BURSTING OF ABDOMINAL ANEURISM UNDER THE PERITONŒUM.

A patient may live months, if not years, after such an accident; its detection is therefore not without interest or importance.

The principal physical signs consist in the gradual formation and increase of tumors, successively in the left hypochondrium, lumbar, iliac, and inguinal regions, which are distinctly pulsating synchronously with the ventricular systole, in some part of their extent; while the action, as well as bellows sound, of the original tumor, should we have previously observed it, are diminished. Percussion would of course give an unnaturally dull sound.

Pain in the left lumbar region, round the hip joint, and extending to the lower extremity, with colic, and symptoms simulating inflammation of the bowels, are amongst the most frequently attendant phenomena.

If the aneurism had burst under the pleura, we should discover the sudden supervention of symptoms, indicating effusion into one or both sides of the chest.

NERVOUS PALPITATION OF THE ABDOMINAL AORTA.

By pressing the cylinder down upon the vessel, and to either side, it will be found of its natural caliber. The impulse is very limited in a transverse direction, but is extensive in the course of the aorta longitudinally, and is sharp and jerking, instead of presenting the steady expansive heaving of an aneurism. The bellows sound, when present, is soft and intermittent, recurring and disappearing, as well as the pulsations, with the variations in the general symptoms.

GASTRO ENTERITIC INFLAMMATION.

Increased pulsations of the abdominal aorta and its principal branches, without corresponding action of the radials, and *combined with fever*, Dr. Stokes considers a valuable indication of intestinal inflammation.

CHLOROSIS.

M. Bouillaud, Raciborski, and others, have almost invariably detected a bellows sound over the heart, and a *continuous* blowing murmur in the larger arteries, (especially the carotids and subclavians,) reinforced by each ventricular systole, and resembling the buzzing of a humming top, the cooing of pigeons, whistling of air through a key-kole, &c., in persons presenting the symptoms of this disease. Very similar sounds may be heard in the arteries after copious hœmorrhages, and since they seem always to coincide with enfeebled circulation, they are not destitute of interest or practical importance.

We hear them most distinctly, by applying the stethescope immediately above the sternal extremity of the clavicle. The murmur is generally limited to one side, but often shifts and intermits.

ENCEPHALIC BELLOWS SOUND.

Dr. Fisher, *(Amer. Med. Mag. No.* 15,) an American physican, states that the stethescope, when applied to the occiput and base of the skull, enables us to discover a bellows sound, in cases of meningœal inflammation. It was diminished or destroyed by compressing the carotids. Dr. Percival Hunt *(v. Dub. Jour. No.* 16,*)* relates a case of bellows murmur, where no nervous or inflammatory symptoms were present. In this instance the sound was *increased* by compressing the carotid of the same side, and not affected by pressure on the other. It *ceased* by obstructing the circulation in the jugulars. The same sound has been mentioned as accompanying certain cases of hydrocephalus, but we are not aware of its conveying any useful indication.

Observations are still wanting to determine the diagnostic value of a bellows murmur in the head.

SECTION IV.

PHYSICAL SIGNS OF DISEASES OF THE ABDOMEN, &c.

EFFUSION OF FLUID INTO THE CAVITY OF THE PERITONŒUM.

When the effusion is in moderate quantity, by placing the hand on one side of the abdomen, and striking in an opposite direction with the other, fluctuation may be distinctly felt; and in cases where the accumulation is less abundant, by applying the hand to the more dependent portion of the parietes, and striking gently and obliquely with the other at a very short distance from the first, we may become sensible of a quick and feeble undulation.

Percussion. We must carefully percuss the abdomen when the patient is lying on his back, and mark the point of transition from a dull to a clear sound. This will generally follow the direction of a horizontal line, encirling the more elevated portions of the cavity; and by repeating the plessimetric examination, when the patient is lying alternately on the right and left sides, we shall distinctly find that the percussion varies with the position; the dull sound always occupying the more dependent regions, the tympanitic sound, the reverse. In cases where the intestines are partially adherent, this distinction will be less palpable; but the effects of change of position, if attentively studied, will always point out the nature of the case.

Where the effusion is scanty, it is advisable, in conjunction with change of posture, to percuss over the ileo-cœcal region, since the intestine is here more stationary and tympanitic than elsewhere. It has also been proposed to place the patient on his hands and knees, and to percuss under, round the umbilicus, contrasting the results with the same process in the recumbent position. When the quantity of effused fluid is sufficient to fill the abdominal cavity, the evidence from change of posture is less satisfactory; but we shall always detect a hollow sound, and probably fluctuation, in the umbilical and epigastric regions, with a gradual increase of dulness, as we approach the more dependent points of the parietes.

Marking the line of dulness with the nitrate of silver, or measuring the abdomen, will enable us to watch the progress of the disease, and the effects of remedies.

OVARIAN OR ENCYSTED DROPSY.

Exterior. In many instances the inequality in the form of the abdomen, its unilateral preponderance, and the presence of a more or less defined tumor, extending downwards to one or other of the iliac regions, would render probable the nature of the case;

but these indications are frequently obscure or very absent, and our diagnosis must in general be founded on the evidence of well executed percussion.

Percussion discovers a dulness which is more complete and more resisting than what accompanies ascites; the loss of sound extends over a very variable, but in most cases, defined space, and is only slightly modified by change of position. Contrary to what is observed in ascites, it occupies the most prominent part of the tumor; while over the lateral and dependent abdominal regions, the clear sound of the intestines will be recognised. The want of resonance can also be distinctly traced into the pelvis; and the hydrostatic line of level is never formed.

The multilocular cyst may often be distinguished from the unilocular, by its inferior degree of fluctuation, and especially by its uneven surface, perceptible through the abdominal parietes, or through the vagina and rectum.

Encephaloid ovarian tumors may be suspected from their unequally resisting surface.

In ovarian dropsy, the neck of the uterus is usually drawn up out of reach of the finger.

EFFUSION OF AIR INTO THE PERITONŒUM.

The abdomen presents a uniform and very elastic surface, yielding an unnaturally tympanitic sound over the greater part of its extent. The natural difference of resonance, characteristic of the stomach and of the large and small intestines, can no longer be distinguished, the whole abdomen apparently consisting of but one cavity.

DEPOSIT OF LYMPH ON THE PERITONŒUM.

The sound and sensation closely resemble what we hear and feel when we squeeze or bend a piece of new leather : to detect it, the stethescope is to be applied over the part of the abdomen where the creak or fremissement is sought for, while at the same time, the parietes are pressed with a moderate degree of firmness and suddeness by the hand : the creaking will be heard loud to the ear, while it is dull to the finger.

Remarks. Dr. Bright (*Med. Chir. Trans. vol.* 19) regards this sound as almost demonstrative of adhesions, while Dr. Corrigan (*Dub. Jour. July*, 1836) considers it only indicative of a tolerably dense and spongy layer of lymph, lining the peritonœum; the latter view is more consonant with other known phenomena : but the subject is open to further investigation.

ABDOMINAL TUMORS.

No certain rules for their detection can be given. When the stomach, bowels, and bladder are empty, palpation and percussion will in most cases determine their solid or fluid consistence; their smooth or nodulated surface; their connexion with the adjacent organs; and whether they are superficial, or deep seated. Our diagnosis is in many instances rather negative than direct, and formed on the principle of exclusion.

When the tumor is seated in the parietes, percussion, if employed with force, will elicit the clear sounds of the intestines underneath.

Percussion may also be advantageously employed to determine the presence or absence of intestine in different tumors, hernial or others, connected with the walls of the abdomen.

ENLARGED LIVER.

Exterior. The right hypocondrium is prominent and enlarged; the epigastrium is full and resisting; and the edge of the false ribs everted. The intercostal spaces are *not* filled up; and the hand will in general detect the edge of the liver, lower down, and over a greater extent of surface than natural.

Percussion. There is intense dulness of sound, with great resistance to the finger, which extends upwards above the sixth rib, where it is succeeded by the pulmonary resonance, and by the clear sound of the intestines and stomach, below and to the left. Anteriorly, the line of dulness is *depressed* by a deep inspiration; which is also the case posteriorly, where the right lung is evidently not so low down as that of the opposite side.

Auscultation. The ear is sensible of no sounds over the corresponding region, with the exception of those of the heart's action, which, in cases where the left lobe is enlarged, the liver pushed high into the chest, or the heart itself dilated, are sometimes feebly transmitted.

The respiratory murmur is also heard immediately above the line of dulness on percussion.

DIFFERENTIAL DIAGNOSIS.

V. Chronic Pleurisy and Pneumonia.

Epigastric tenderness is often depending upon an enlarged liver. Percussion, executed at a time when the stomach is empty, enables us to avoid this mistake.

HEPATIC ABCESS.

The diagnosis can often be only inferred from the general symptoms. If the collection of matter is superficial, it would furnish the ordinary indications of a local collection of fluid, not occupying either the pleural cavity or that of the peritonœum.

If communication with the bronchi had taken place, the physical signs, independently of sudden copious expectoration, would be those of an excavation, containing air and fluid, modified by the voice and cough, and situated lower down than what could be reconciled with the presence of the lung itself.

If the abscess communicated with the intestines, by compressing the abdomen or right hypocondrium, the stethescope remaining applied over the suspected point, it is probable that a gurgling ronchus, or other sounds, indicating the presence of air or fluid, might be produced by the interchange of contents between the intestine and the anormal excavation.

HYDATIDS OF THE LIVER.

If abundant and superficial, they give rise to a vibratory sensation, felt by the finger when percussing.

CANCEROUS OR OTHER TUMORS OF THE LIVER.

They are only susceptible of physical examination when they are sufficiently near the surface, and voluminous enough to be felt.

DISTENSION OF THE GALL BLADDER.

It is indicated by percussion detecting over the region of this organ a circumscribed dulness, without resistance, and continuous with the resisting and duller sound of the liver; while it is limited in every other direction by the tympanitic sound of the intestines. We need scarcely say, the examination requires great practical tact.

ENLARGED SPLEEN.

The physical signs are founded upon the existence of unnatural dulness on percussion in the splenic region, which we can dertermine, not to depend either on the stomach or lungs. In many instances, palpation below the false ribs will detect the lower extremity of the organ. It is evident that the co-existence of pneumonia, pleurisy, acites, or great enbonpoint, would increase the difficulty of the diagnosis.

It is advisable to percuss the patient when lying on the right side.

DILATED STOMACH.

The only satisfactory physical evidence of a dilated stomach, is the careful comparative examination of the abdomen by percussion, both before and after the patient has swallowed a large quantity of fluid. The descent of the liquid, and its locality, may also be detected by auscultating over the organ during the act of deglutition. In some emaciated cases, the outline of the viscus, when distended, and especially if thickened, may be traced upon the parietes.

STERCORACEOUS CONCRETIONS.

In addition to the information we can in most instances derive from carefully executed palpation, percussion gives a dull sound over the point corresponding to the fœcal accumulation, which is often conjoined with a kind of metallic or humoric resonance. The sound does not sensibly vary by change of position.

Remarks. The student scarcely needs reminding, that by percussion we can decide upon what is often very important to ascertain, viz. the presence of air, fluid, or solid contents in the cavity of the intestines generally.

There are not unfrequently swellings, hard to the touch, sudden in their appearance, and variable in situation, which percussion at once determines to be depending on inflated intestine, but which, without recurring to this test, are often very puzzling to the practitioner.

DISTENDED BLADDER.

The tumor may often be felt, and in most cases an elastic resisting sensation is experienced by the hand when compressing the hypogastric region. *Percussion* gives a dull sound from the pubis upwards, which is not modified by change of position, and is limited above and laterally, by the clear sound of the intestines. In obscure cases the distended fundus may be felt by introducing the finger into the rectum.

VESICAL CALCULUS.

By applying the stethescope to the pubis or sacrum during catheterism, the shock of the catheter against the stone will be distinctly perceived.

Percussion. The sound in the hypogastric region becomes dull and fleshy in proportion as the uterus rises above the margin of the pelvis, gradually limiting the tympanitic sound of the abdomen to the lateral and left superior regions. The sound has a drier and harder character over the point corresponding to the head of the fœtus.

Auscultation. At a period, seldom earlier than the fourth month of gestation, we can detect a distant bellows murmur, synchronous with the *maternal pulse*, and affected by all its variations. The most frequent situation is one or both iliac regions, but it is often present over the anterior surface of the uterus, becoming more diffused with the progress of pregnancy. By change of position it may be displaced from one side to the other, corresponding with the more dependent portion of the womb; and we have very distinctly traced it in the femoral artery, below Poupart's ligament. (*V. Med. Gaz. Jan.* 9, 1836.) Occasionally it intermits, and when absent anteriorly it may sometimes be discovered by auscultating the sacral and lumbar regions.

Pulsations of the fœtal heart. From the seventeenth or twentieth week, the double pulsatory sound of the fœtal heart, generally beating from 120 to 140 in the minute, may be detected by an attentive ear. In the earlier periods it is generally best heard over a surface of three or four square inches in the hypogastric region. In more advanced pregnancy, its most usual site is round the umbilicus, or midway between that point and one of the anterior spines of the ileum; but we must diligently explore the whole surface of the uterus. The sound is always weak and distant, particularly in the earlier periods, and requires a practised ear; but as pregnancy advances, it becomes stronger and more diffused. It alone, is pathognomonic of the presence of a fœtus.

Compound pregnancy. It requires considerable tact to be able to pronounce with any degree of tolerable accuracy upon this point. The diagnostic sign would be, the presence of pulsations whose greatest intensity corresponded to two distinct points of the uterus. It would be rendered more satisfactory, should the pulsations of both fœtuses not be synchronous, as has actually been observed.

For the detection of either *complicated, pseudo,* or *simulated* pregnancy, the negative evidence of auscultation cannot be too highly valued.

Remarks. It must never be forgotten that aneurisms, chlorosis, and copious hæmorrhage, may originate a *bellows sound* in the abdomen. The value of this sign is therefore less absolute than the other, and must always be considered in connexion with the concomitant symptoms.

We' distinguish the fœtal pulsations from those of the mother, by their want of synchronism with the maternal pulse, by the sounds being double, and without any perceptible impulse. If the double sounds of the mother's heart are heard low down in the abdomen, we can easily assure ourselves of the fact, by finding that they become louder, and the impulse stronger, as we approach the cardiac region.

Abdominal examination. Let the patient lie on her back, with the head and shoulders elevated, and the limbs well drawn up, and then after a deep and sudden expiration we may often succeed in feeling not only the contour of the uterine tumor, but even the parts of the child, when the pregnancy is considerably advanced.

To discover the *motions* of the child, apply the hand to the parietes and press them suddenly with a degree of succussion.

Dipping the hand in very cold water and then applying it over the uterus, often succeeds.

Movements which are extremely faint or altogether imperceptible to the hand, may sometimes be very distinctly perceived by gradually pressing the *cheek* upon the abdomen and leaving it in contact for some time.

The rolling over of the child from one side of the uterus to the other may often be felt, especially if the child be dead. The mother herself not unfrequently complains of this sensation.

Vaginal examination. The results are seldom satisfactory before the fifth month.

Introduce the forefinger of the right hand (the patient standing) into the vagina, and place it between the os tincœ and the pubis, and with a jerk upward, we may sometimes so tilt the depending head of the child as to make it rise through the liquor amini, when it again falls down with a slight shock or impulse upon the finger. It is useful at the same moment to place the left hand over the uterus.

FRACTURES.

The stethescope applied over the place of fracture, on the slightest motion of the part, conveys a much more decided crepitus, than is perceived by the naked ear during the most extended movements. The crepitus is loudest immediately over the fracture, but it may be heard at a great distance, when the latter occurs in the compact part of a long bone. The crepitus of a fractured femur may sometimes be heard on the skull.

When fluids are effused, a bubbling noise is combined with the crepitation. When the fracture is compound, we hear a sound similar to a forced respiration made with the mouth open.

In *luxations* the sound is dull and obscure, and conveys precisely the impression of two moist and polished surfaces sliding over one another. (Forbe's Laennec.)

It is probable that this mode of investigation admits of other applications to the discovery of diseases of the joints, and might frequently enable us to determine whether the surfaces were smooth or rough; and whether the bones were, or were not, denuded.

MUSCULAR CREPITATION.

In the *Medico-Chirurgical Review, for October,* 1834, *p.* 452, two cases are mentioned, (one by the editor, the other by Mr. Brodie,) where a loud crackling noise was heard by the ear at a distance, and still plainer with the stethescope, accompanying the contraction of the affected muscles. In one example, the rectus femoris, and in the other, the muscles about the shoulder, manifested the peculiarity in question. The patients themselves were quite conscious of the sound, and made it a subject of complaint. No post mortem examination has yet afforded an opportunity for elucidating the cause of the phenomenon.

DISEASES OF THE TYMPANUM AND EUSTACHIAN TUBE.

If we apply the stethescope upon the mastoid process, which the patient inspires forcibly with the nostril of the same side, the other being closed with the finger, we perceive a blowing sound, indicating the penetration of air into the mastoid cells. If there is any moisture in the eustachian tube or tympanum, we perceive a gurgling, very like that of the mucous ronchus, and if the mucus happens to obstruct the tube, all sound ceases. (Forbe's Laennec).

By the same Author,

PATHOLOGICAL RESEARCHES ON PHTHISIS.

BY E. CH. A. LOUIS,

Doctor of Medicine of the Faculties of Paris and St. Petersburgh: Physician to the Hospital of la Pitié; Perpetual President of the Société Médicale d'Observation; Member of the Royal Academy of Medicine; Correspondent of the Royal Academy of Marseilles, of the Imperial Medico-Chirurgical Academy of St. Petersburgh, and of the Royal Medical Society of Edinburgh. Member of the Legion of Honour.

Translated from the French, with Introduction, Notes, Additions, and an Essay on Treatment,

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M.D.E.; M.D.P.; M.R.C.S.E.;

Member of the Société Médicale d'Observation; Bachelier ès-lettres of the Sorbonne; Elève of the Hospitals of Paris and of the Ecole Pratique; Ex-President of the Hunterian Society; and Member of the Royal Medical and Ethical Societies of Edinburgh and London. 8vo. p.p. li. 388.—1835.

"To Dr. Cowan the thanks of the profession are due for having naturalised one of the most valuable productions of the foreign press; a work to which constant appeal and reference will be made by all future writers on phthisis."—*Medico-Chirurgical Review, No. 45, April 1st,* 1835.

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GIBBS, PRINTER, BATH.

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